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Writing development in children with language difficulties and the influence of spelling skill

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Psychology &
Human Development

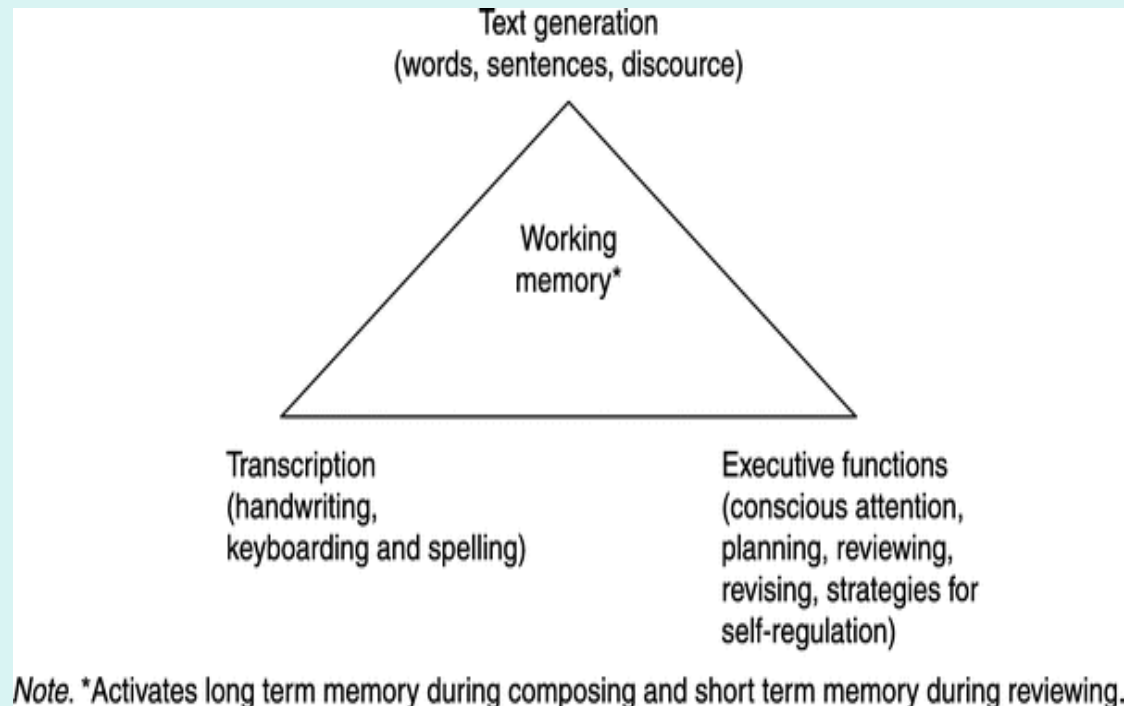
Why might spelling support written text production? – evidence from children with specific language impairment (SLI)

- Children with SLI
 - Specific problems or disorders in comprehending or producing speech and a delayed learning of language
 - Problems associated with limited processing, grammar, phonology & the lexicon
 - Poor at transcription (Spelling & Handwriting) as well as Text Generation (Connelly, Dockrell & Barnett, 2011)

Spelling and the production of written text

Spelling skills are not usually explicitly specified in developmental models of writing

- The role of Spelling?
- Constraint on development?

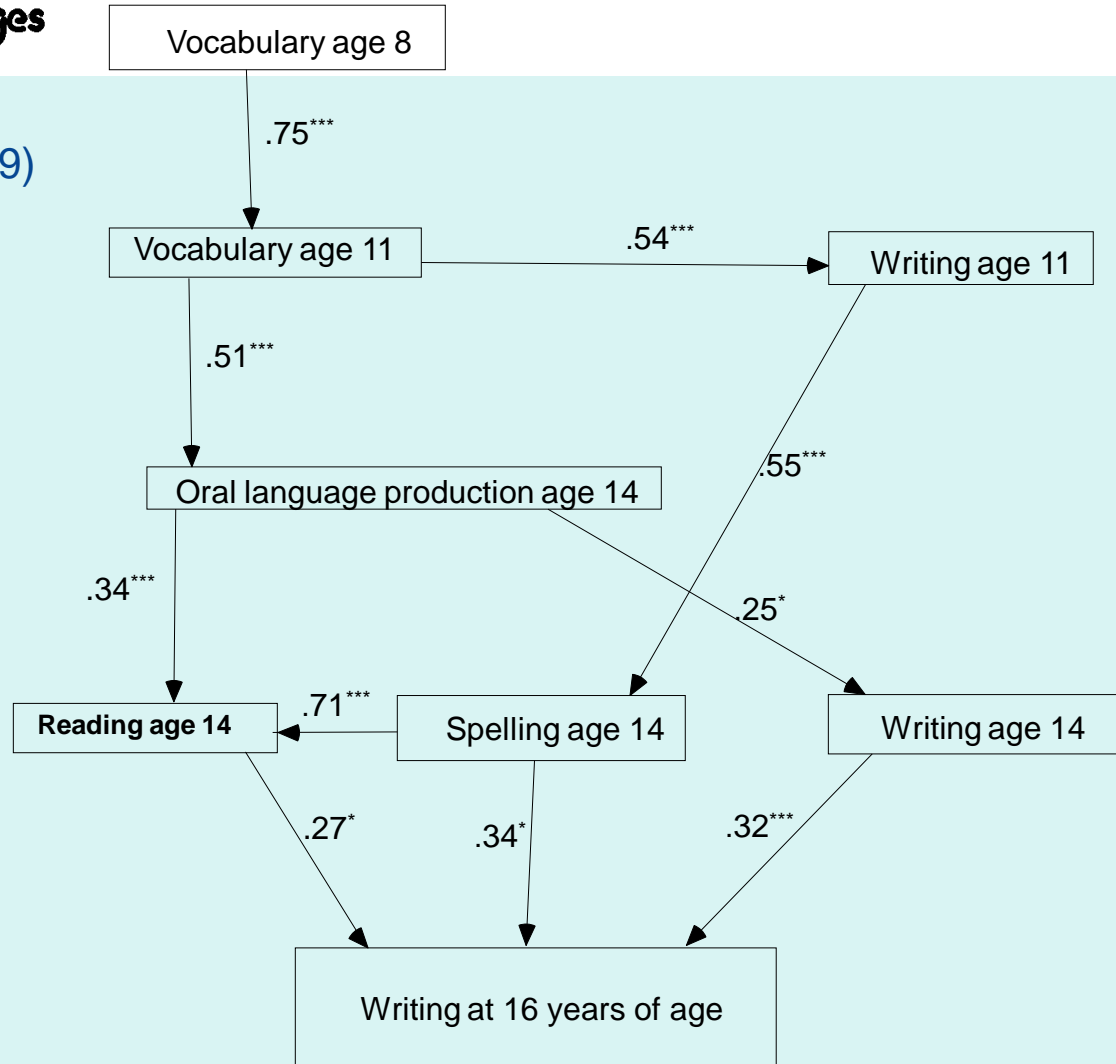


Few studies looking at writing & spelling in children with SLI

- Gillam & Johnston, (1992);
- Scott & Windsor, (2000); Windsor, Scott, & Street, (2000)
- Bishop & Clarkson (2003)
- Mackie & Dockrell, (2004)
- Dockrell, Lindsay & Connelly, (2009)

Dockrell, Lindsay & Connelly, (2009)

Path analysis examining predictions of literacy and language to writing at age 16 in sample of children with SLI.



*** <.001, ** .01, * .05

Current study

- Comparison between children with SLI and a cohort matched on receptive vocabulary (language match) as well as a chronological age match.
- Use of standardized writing measure complemented by a detailed analysis of the spellings within the written text
- Measures of spelling and non-verbal ability to identify patterns across cohorts and control as appropriate in analyses

Methods

Participants

SLI -Specific language impairment

N = 23 with a specific language impairment

final year of primary/elementary school **10.5 years old**

Significant gap between language and non-verbal ability

Literacy difficulties – including reading, spelling and text production

CA – matched on chronological age

N = 23

final year of primary/elementary school **10.5 years old**

LA – matched on vocabulary raw score

N = 23

No significant differences in spelling raw score (BAS)

No significant differences in non-verbal ability standard score

Significantly younger **7.9 years old**

Measure of written language

Wechsler Objective Language Dimensions (The Psychological corporation 1996).

6-16 years

Scoring

Writing sub-test

Analytic scoring- scores from 1-4

Descriptive writing to a verbal prompt.

- Ideas and development
- Organisation and unity
- Vocabulary

15 minutes

- Sentence structure

Record total analytic score

- Grammar and usage
- Capitalisation and punctuation

Example Essays Age 11 SLI

WOLD RESPONSE BOOKLET

Written Expression

67

Prompt 1 or 2
(Circle one.)

Dear 20xw e e one
I want a hours with 4 Bed's rooms
and 2 ce his. and in west green.
and 3 mat's. and a G.
From Sam

Example Essays Age 11 LA Match

Written Expression

Topic (Circle one.)

I want to have a swimming pool and a motor bike creek and I want the biggest rollercoaster in the world. And I would like a Mcdones it my house to. And can I have a remote for etefing. And the biggest TV in the world to. And can I have a very big slide for my swimming pool. And a airoplane and in my house can I have a robbet and three brink mashans.

Example Essay at age 11 CA Match

15 Mendip Road,
New Country,
London.
QRY 8ZA

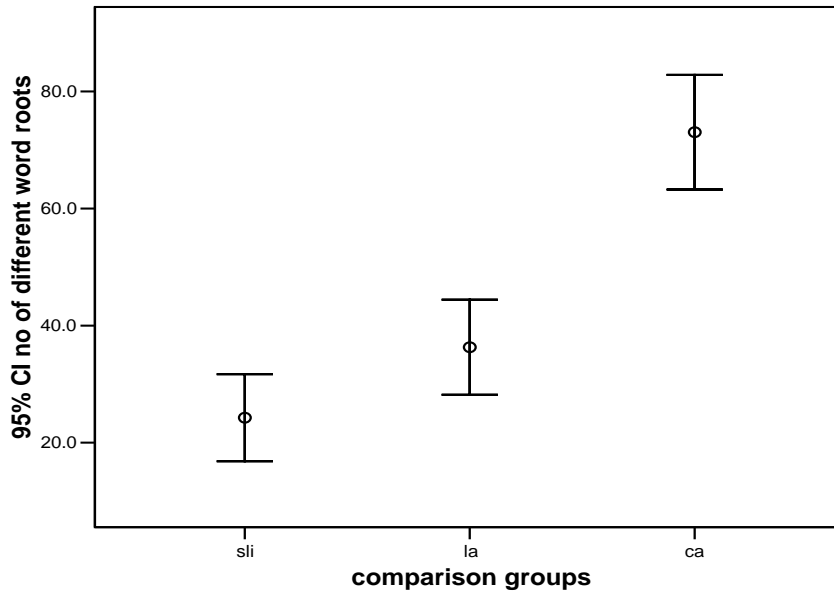
Dear Sir,

I would like a detached house.
With two bath rooms. One 100m by 50m
living room. Also a Kitchen 80m by 20m with
six cupboards made by hard thick wood.
Five Bedrooms. Four of them with double
beds and one with a single bed. In every
bed room I would like a door on every
room and a cupboard in every bedroom.
In the Kitchen also a double cooker with
a grill (a electric cooker please.) Down stairs
I want my kitchen and three bedrooms with
my living. Upstairs I would like one bathroom
and the other three bedrooms and my
one of bowling room.
my
bath- I hope to see you in " - far further
rooms.

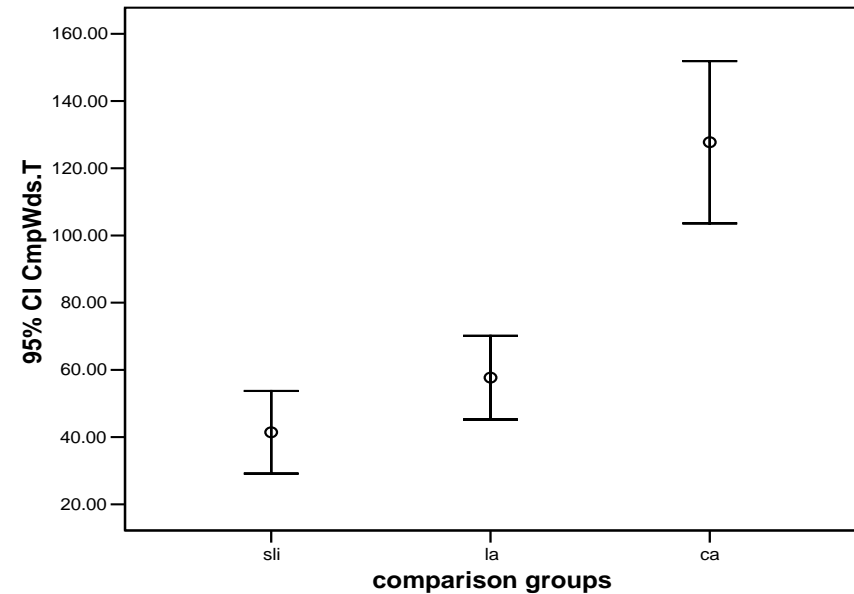
Text measures

No difference in overall scores for the compositions between SLI and LA match. Differences though in lexical diversity and total number of words produced.

Lexical Diversity



Total number of words produced



Predicting performance on the WOLD

- SLI** adjusted R squared = .35
 spelling & vocabulary or
 adjusted R squared = .45
 Number of Different Word Roots
- LA** adjusted R squared = .23
 spelling & vocabulary or
 adjusted R squared = .26
 predictors spelling and Number of Different Word Roots
- CA** adjusted R squared = .64
 spelling & number of sentences

However the measure of sentences is predicted by NDWR and spelling for the CA
adjusted R squared = .80

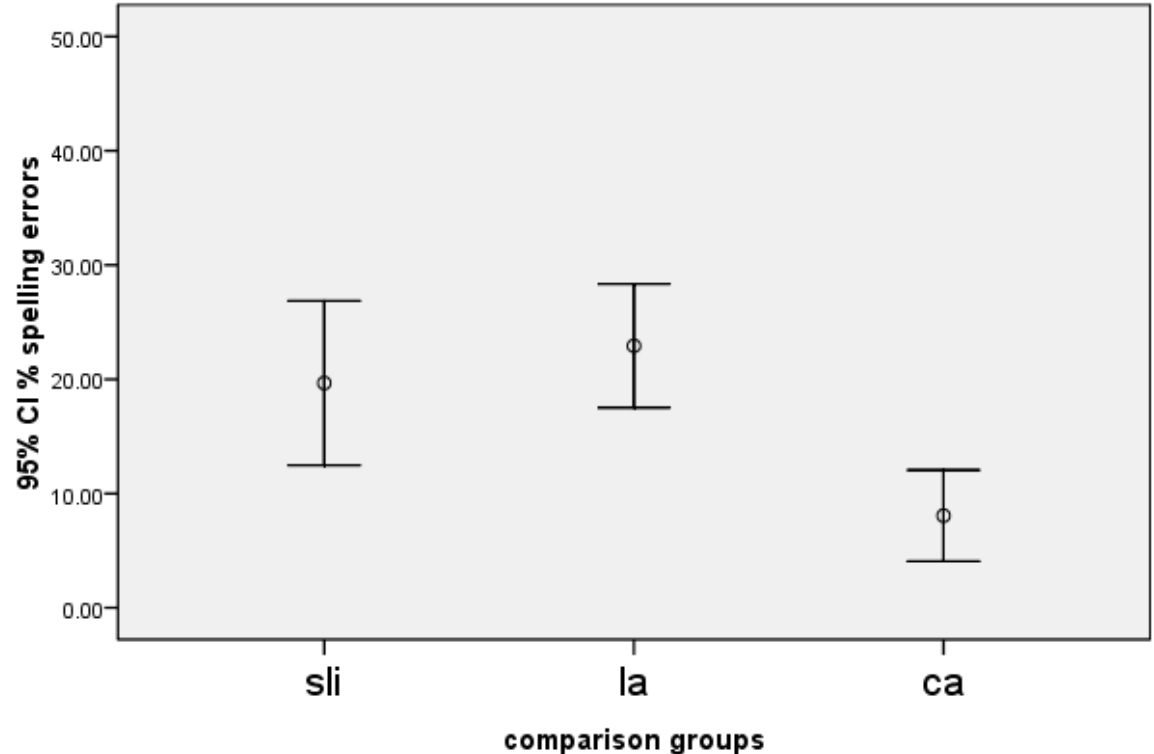
Spelling

Total Spelling Errors

(SLI=LA)>CA

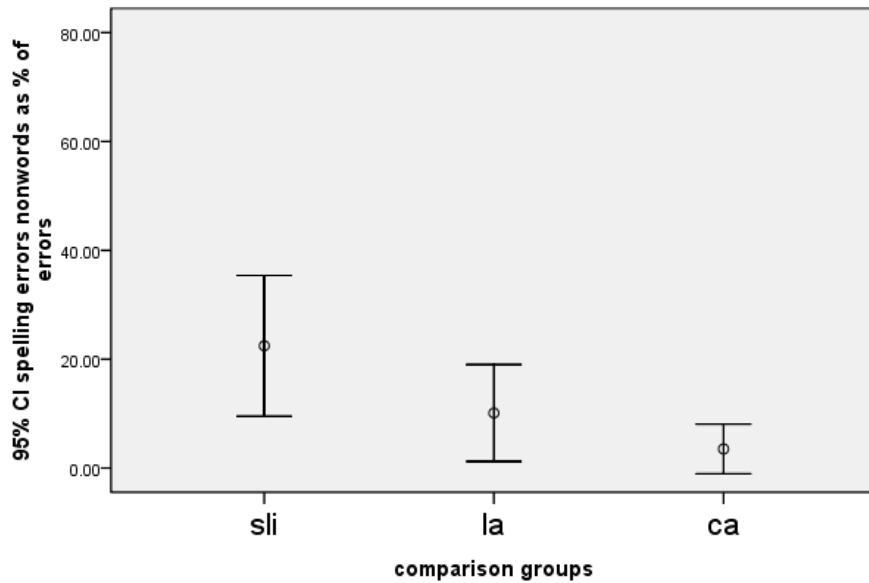
Large amount of spelling errors in texts of SLI and LA group.

% spelling errors in the WOLD text

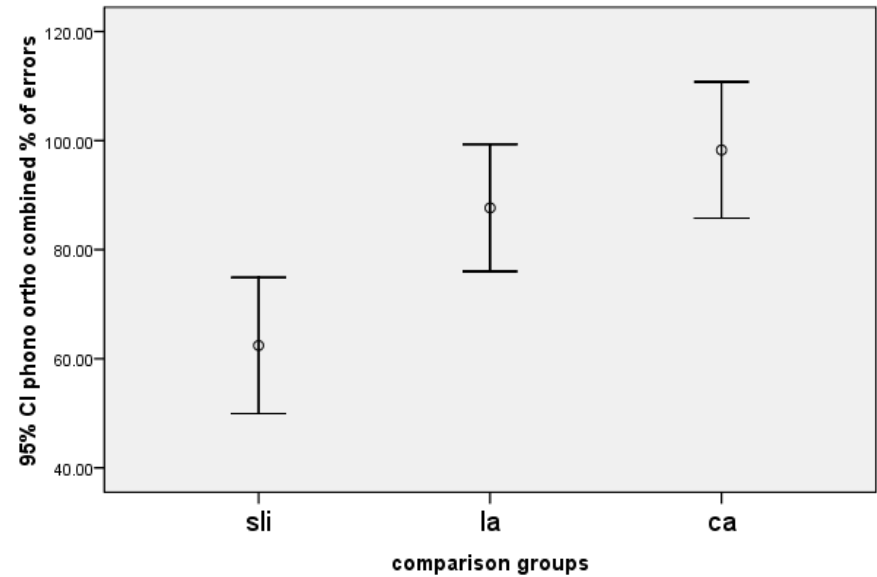


Spelling Error Difference...

Illegal letter combination errors produced



Phonological/Orthographic errors produced



Visual Analysis Scoring of Spelling Errors in WOLD Text (Silliman et al, 2006)

poach

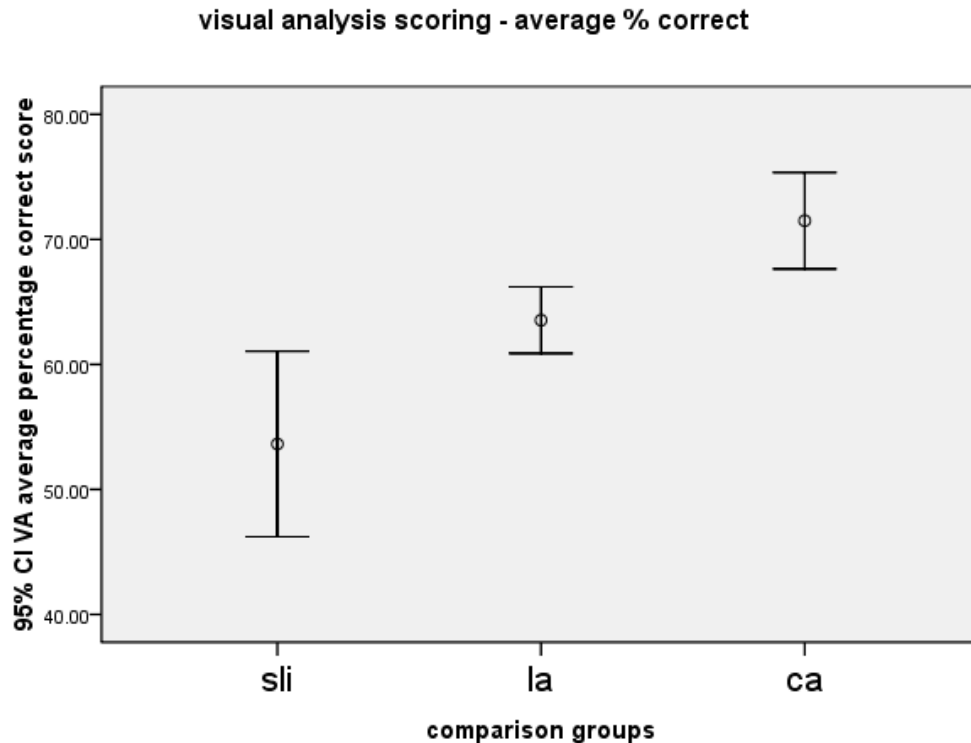
“po” “oa” “ac” “ch” + 5 letters = 8

“poch”

“po” “ch”+ 4 letters = 6

Score = $6/8 = 0.75$

SLI Group significantly less accurate at producing correct letters and combining appropriate letter clusters when compared to the intended target words.



Sample 2: Focus on morphology

Participants

SLI -Specific language impairment

N = 34 with a specific language impairment

Primary/elementary school **10.1 years old**

Significant gap between language and non-verbal ability

Literacy difficulties – including reading, spelling and text production

CA – matched on chronological age

N = 34

Primary/elementary school **10.1 years old**

LA – matched on CELF

N = 34

No significant differences in spelling raw score

No significant differences in non-verbal ability standard score

Significantly younger Primary/elementary school **8.2 years old**

Sample 2: Focus on morphology

Compared to language/spelling age matched peers in written language: Silliman et al. (2006), Mackie & Dockrell (2004), Windsor et al. (2000)

Inflectional morphology

- Most frequent/significant: regular past tense and plural omissions
- Similar findings in studies of spoken language (Montgomery & Leonard, 1998, Marshall & Van Der Lely, 2007)

What about derivational morphology?

- Relatively neglected but some trends in Silliman et al. (2006) that problems with shift in phonology and/or orthography between base and derived forms, e.g. magic-magician as opposed to prison-prisoner where the base word did not change
- Problems are unit not being recognised, e.g. megishen, versus suffix attempt, migition

Sample 2: Morphological Spelling Tasks

Two tasks: 21 words per task

Inflectional:

- Regular past tense verbs –ed /d/ = filled, /t/ = kissed
- Regular plural nouns /s/ = tables, /z/ = trees

Derivational:

- Orthographic shift, e.g. argument
- Phonological shift, e.g. different
- P+O shift, e.g. pleasant

Coding scheme: Green et al. (2003), Silliman et al. (2006)

Sample 2: Results

Inflectional

- (SLI = LA) < CA for words correct, morphemes correct
- (SLI = LA) > CA for phonologically based errors
- NO DIFFS for omissions and non-phonologically based errors: low frequency of both

Derivational

- (SLI = LA) < CA for words correct, morphemes correct
- SLI > (LA = CA) for non-phonologically based errors
- NO DIFFS for omissions and phonologically based errors

Summary

- 1. Children with SLI produce many more spelling errors when writing text than peers of the same age but not a language age matched group.**
- 2. Spelling ability in children with SLI significantly predicts compositional level.**
- 3. A language matched group of children differed in the kinds of errors produced when writing text despite
 - a) being matched on a dictated spelling test and**
 - v) producing the same amount of errors in the written texts.****
- 4. There was a significant relationship between the ability to produce spellings that were orthographically similar to targets and compositional competence.**

Conclusions

Spelling ability acts as a direct constraint on the composition of text.

Children with SLI have particular problems learning to spell accurately.

Error analysis illustrates subtle differences between groups seemingly matched.

Spelling interventions need to be devised to the needs of the child and not just to their developmental level.

Questions?

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Predicting fluency and words produced in children with SLI at age 16

Fluency-speed of writing letters

- Significant model 19% of the variance
- Predictors spelling and non-verbal ability

Numbers of words produced

- Significant model 22% of the variance
- Predictor spelling